Bacterial Meningitis And Meningococcus

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Topics

- Review Basic Clinical Features and Microbiology of Meningococcal Disease
- Review National and New Hampshire Epidemiology
- Review Treatment and Prophylaxis Recommendations

Clinical Disease and Microbiology

- A disease caused by a bacteria called *Neisseria meningitidis,* the meningococcus
- Meningococcus lives in 4% of healthy persons nose and upper airway
- < 1% of carriers end up getting the disease

- Meningitis is an inflammation of the membrane lining of the brain
- Many different things can cause meningitis such as viruses, bacteria, parasites, toxins, and others.
- Meningococcus penetrates the lining of the nose or mouth and getting into the blood stream. From there it can cross into the spinal fluid.
- Bacterial meningitis is when bacteria infect the lining of the brain.

- Bacterial meningitis kills 10-15% of persons who are infected despite the best medical therapy.

- Besides meningitis, meningococcus can also cause a blood steam infection or pneumonia.

- There are different strains of meningococcus. Some are more dangerous than others but all have caused fatal cases.

- Most common serogroups are A, B, C, Y and W–135 causing > 90% of all disease worldwide

- Symptom spectrum is broad
- In many are typically a sudden onset of fever, intense headache, nausea and vomiting, stiff neck, and mental status changes such as:
  - Change in consciousness
  - Unusual behavior
  - Excessive sleepiness
  - Seizures
  - Over sensitivity to light
- Rash frequently most noticeable on the legs
- The symptoms can change rapidly.

- The best test to diagnosis meningitis is a spinal tap. The fluid around the brain looks cloudy and has bacteria in it.

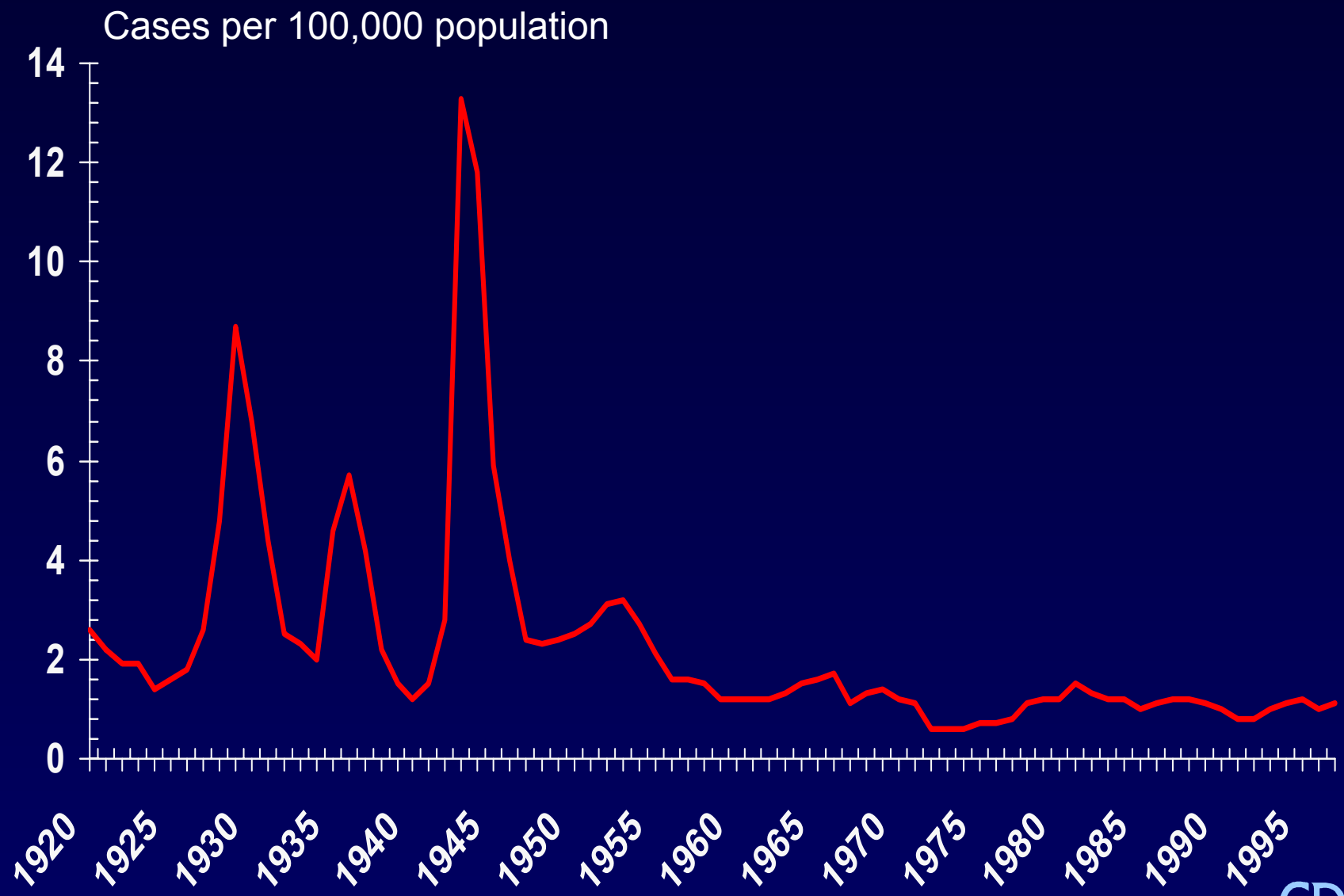
- Culturing of the fluid will cause meningococcus to grow. This is what confirms the case.

- Further laboratory tests confirm what strain it is.

Epidemiology

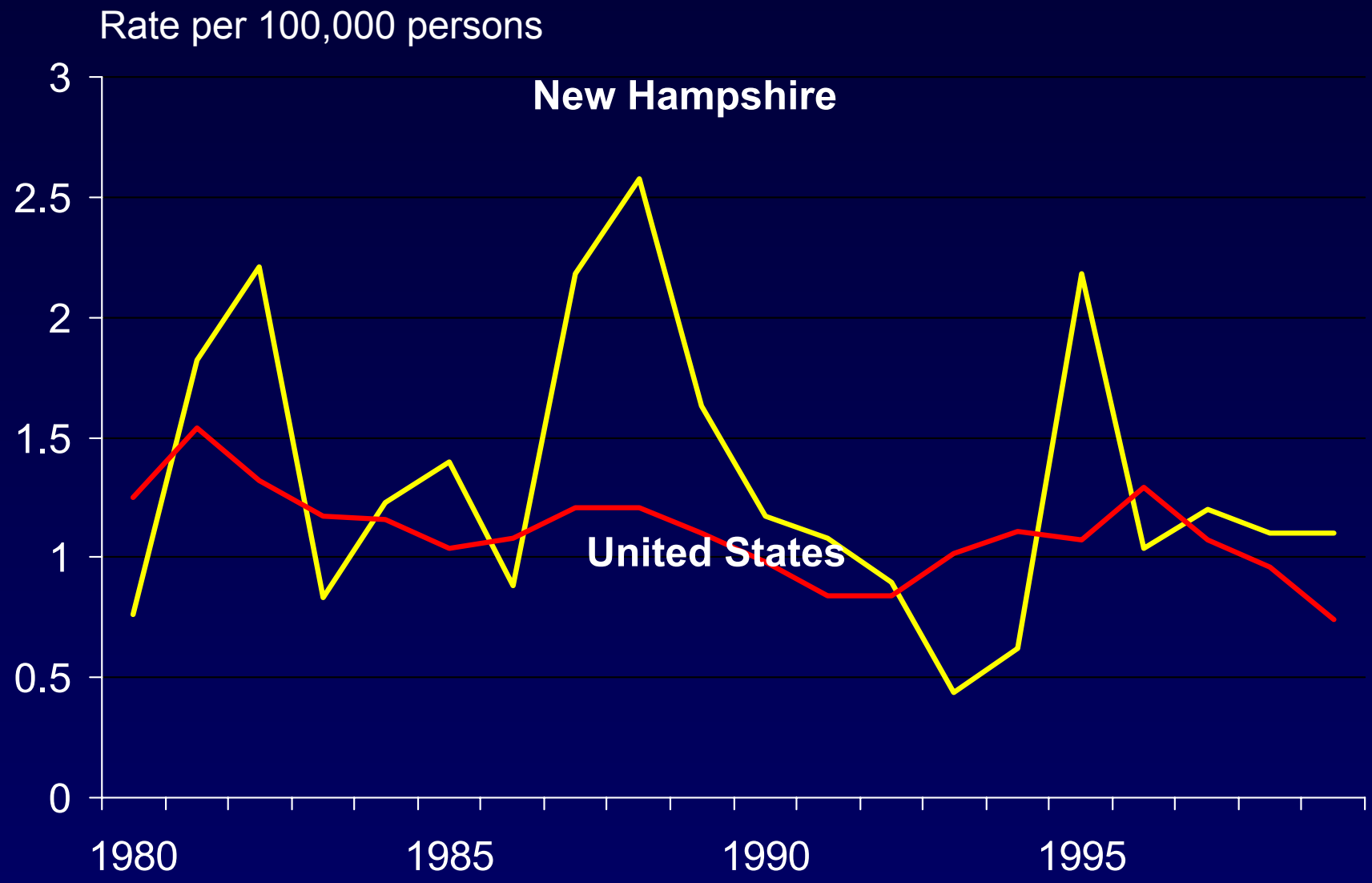
- Most common form of meningitis in children
- Approx. 2,600 cases/yr
- Peaks in late winter and early spring
- Major worldwide health problem with travel health implications
- Serogroups B and C cause majority of disease in the US, with Y cases increasing

Meningococcal Disease. United States, 1920-1996

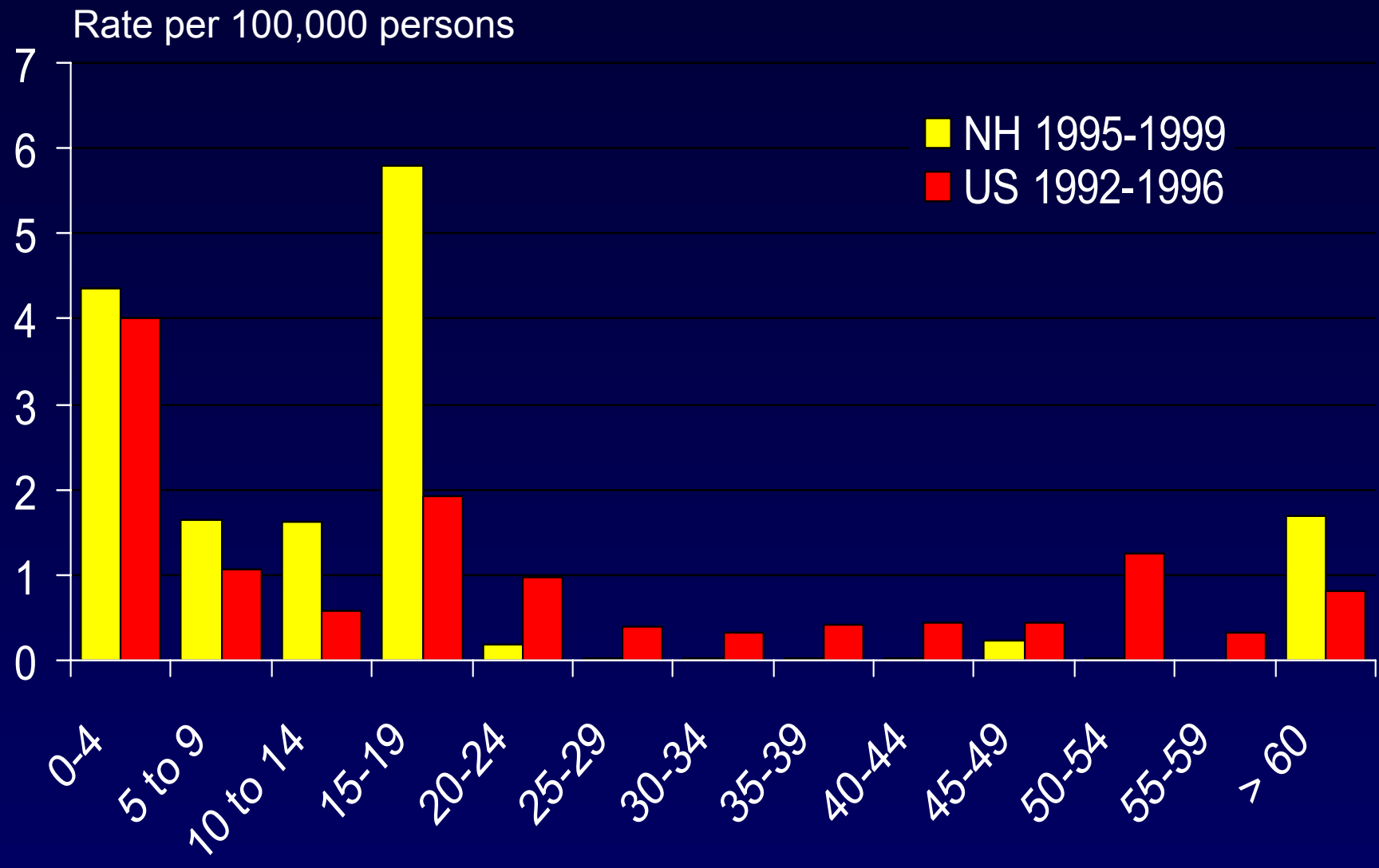


CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

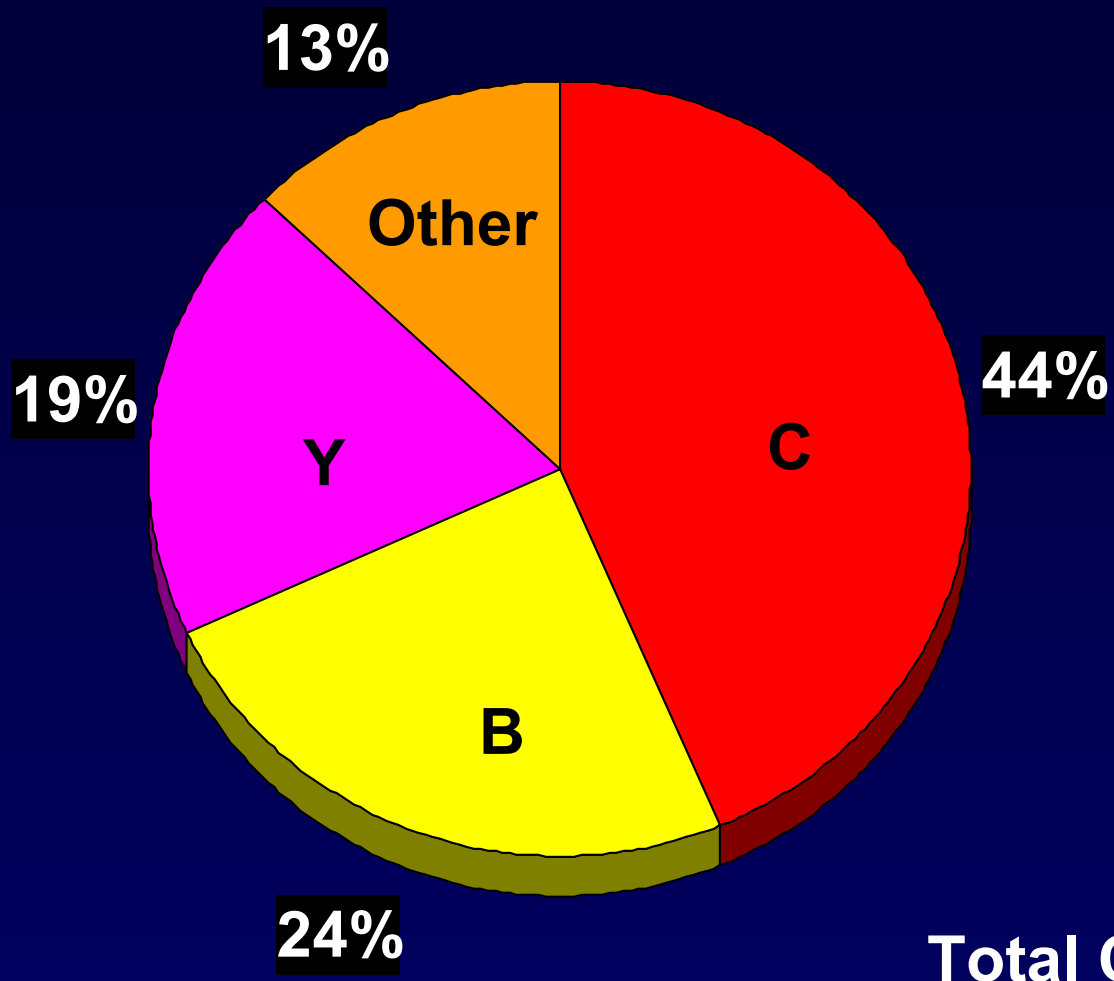
Rate of Invasive Meningococcal Infections New Hampshire and the U.S., 1980-1999



Rates of Meningococcal Disease by Age Groupings. New Hampshire and U.S.



Serogroup Distribution of Meningococcus Cases, All Ages. New Hampshire,1995-1999.



Total Cases = 78

- Meningococcus is communicable to others.
- The highest group at risk are people who live with a person with the disease or who are close contacts.
- Meningococcus is spread through direct contact with respiratory and nasal secretions. I.e. through sharing eating utensils or kissing.
- Persons who don't have this level of contact are at no increased risk for the disease…. Unless there's an outbreak.

- In an outbreak, people may be at increased risk
- Currently, NH is experiencing a cluster of cases with one outbreak.
- An outbreak occurs when two or more cases are linked through a common location.

Prophylaxis and Control of Spread

- Household and close contacts are at 400 – 500 fold greater risk of disease than the general public from a sporadic case

- Antibiotics confers immediate protection

- Should be given to:

  - household members
  - daycare center classmates and teachers
  - anyone directly exposed to oral secretions

Antibiotics Recommended for Meningococcal Prophylaxis

Non-pregnant Adults and Children

Rifampin 600 mg. p.o. B.I.D. x 2 days

Adults and Pregnant Women

Ceftriaxone 300 mg. I.M. X 1

Children

Ceftriaxone 150 mg. I.M. x 1

Adults

Ciprofloxacin 500 mg. p.o. x 1 pill

Vaccination

- Currently licensed vaccine is composed of elements of polysaccharide coat of the bacteria
- Serogroups A, C, W-135, and Y
- Recommended for control of serogroup C meningococcal disease outbreaks although its not guaranteed to control them
- Recommended for use among certain high risk-groups

- Vaccine may benefit travelers to countries in which disease is hyperendemic or epidemic
- A poor vaccine in children <18-24 months
- Immunity of limited duration, especially in young children. Only 2-3 years at best.
- Vaccine confers effective protection
- Protective levels of antibody are usually achieved within 7-10 days

- In the past two weeks NH has had 6 cases.

- 15 y/o boy from East Swanzey
- 16 y/o boy from Gilsum
- 18 y/o girl from Bennington
- 14 y/o boy from Concord-area
- 13 y/o boy from Colebrook-area
- 65 y/o woman from Manchester-area

- We have cultures in 4 cases. These four are called confirmed cases.
- Of these 2 are strain B and 2 are strain Y.
- The two strain B are linked by Monadnock Regional High School and this is considered an outbreak.
- The rest of the cases are not linked and are considered sporadic cases.

DHHS Recommendations

- Because MRHS has an outbreak, NH DHHS recommended antibiotics for all students and staff. Approximately 1000 people took advantage of this on Dec 26.

- DHHS recommends antibiotics for all the close and household contacts. We go out and find these people.

- DHHS does not recommend antibiotics or vaccine for any other groups

- Currently, DHHS is recommending that all members of the public increase their level of awareness of the disease and seek out the attention of a health care provider if they have symptoms.

Treatment

- Mainstay of therapy is high dose intravenous antibiotics and supportive therapy
- Care should preferably be provided at a tertiary care center
- All persons should receive an additional antibiotic that eliminates carriage prior to discharge

24-Hour Hotline

1 (866) 273-6453

Consultations

Business Hours: (603) 271-4496
Evenings and Weekends: (603) 271-5300